CLAIMS

1. An imaging system comprising:

an aperture for receiving radiation from object space;

an interferometer arranged such that radiation received through the aperture is incident thereon;

an array of detector elements for receiving output radiation from the interferometer;

a controller arranged to scan the interferometer through a range of different path lengths; and

a processor for receiving signals from a plurality of elements of the array, determining a spectral radiance for each of a plurality of pixels, each pixel corresponding to one or more elements of the array, and generating an image, the grey scale of which is determined by the spectral radiance of each pixel.

2. A system as claimed in Claim 1 where in the array of detector elements is a two dimensional focal plane array.

3. A system as claimed in Claim 1 ~~or 2~~ wherein the processor performs a Fourier transform to obtain the spectral radiance of each pixel.

4. A system as claimed in Claim 2 ~~or 3~~ wherein the spectral radiance for a plurality of pixels is determined simultaneously.

5. A system as claimed in ~~any preceding claim~~ Claim 1 further comprising an image generator for generating an image in which the grey scale is dependent on the spectral radiance of each pixel.

6. A system as claimed in ~~any preceding claim~~ Claim 1 wherein the interferometer is scanned a plurality of times to obtain the spectral radiance of the pixels.

7. A system as claimed in ~~any preceding claim~~ Claim 1 wherein the interferometer scan is non uniform.

8. A system as claimed in ~~any preceding claim~~ Claim 1 wherein the interferometer is a solid state device.

9. A system as claimed in Claim 8 wherein the interferometer comprises a material the refractive index of which may be changed by controlling an electric field across it and wherein the path length of one leg of the interferometer is altered by varying the refractive index of the material.

10. A system as claimed in ~~any preceding claim~~ Claim 1 comprising a display and

wherein the spectral radiance data is processed to provide on the display a pseudo three dimensional cube with two perpendicular axes corresponding to the coordinates of the image and the third mutually perpendicular axis corresponding to wavelength of radiation received.

11. A system as claimed in ~~any preceding claim~~ Claim 1 wherein the processor performs an intra-array comparison and allocates each pixel a specific spectral content partly in dependance on the spectral radiance of other pixels.

12. A system as claimed in ~~any preceding claim~~ Claim 1 wherein the processor performs a histogram manipulation on the spectral radiance value and allocates a grey scale to each pixel in dependance the number of pixels having a value in any one range to maximise grey scale contrast.

13. A system as claimed in ~~any preceding claim~~ Claim 1 further comprising a polarimeter for receiving radiation from the same object space as radiation is received by the interferometer, the processor combining data received from the polarimeter with that received from said array of detector elements to obtain a score for each pixel.

14. A system as claimed in ~~any preceding claim~~ Claim 1 further comprising a camera for receiving radiation over the range of wavelengths of interest from the same object space as radiation is received by the interferometer, the output of the

camera providing intensity data which is combined by the processor with that received from the said array of detector elements to obtain a score for each pixel.

15. A system as claimed in Claim 13 ~~or 14~~ wherein the data from the different sources is combined by a fusion algorithm contained within the processor.

16. An imaging system substantially as hereinbefore described with ~~reference to~~ and/or as illustrated in the accompanying Figures.